

Title/Subject: Standard Test Procedure - Surface Temperature Test of Polycarbonate Material		
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1.0 PURPOSE

The purpose of this standard test procedure (STP) is to determine the maximum surface operating temperature of polycarbonate lenses or components.

2.0 SCOPE

This STP encompasses enclosures submitted to MSHA for evaluation under 30 CFR, Part 18.

3.0 REFERENCES

3.1 Policy for the Evaluation of a Window or Lens on an Explosion-Proof Enclosure, EDDS APOL2172.

4.0 DEFINITIONS

4.1 N/A.

5.0 TEST EQUIPMENT

5.1 Meter and or data acquisition system

5.2 Thermocouple

5.3 Suitable rated power supply or variable transformer

6.0 TEST SAMPLES

Four (4) samples of the polycarbonate lens or component to be tested are required. The test shall be conducted with the sample assembled in the frame or assembly in which used. No "equivalent thereof" samples or assemblies shall be used.

7.0 PROCEDURES

7.1 Verify that the lens is assembled in accordance with the assembly specifications.

7.2 Attach the thermocouples in a secure manner to three (3) points on the polycarbonate material, nearest the source of heat. The method of attachment will vary, but may include the use of gravity, natural spring of the wire, heat transfer compound, etc.

- 7.3 If using the data acquisition system program it to record the temperature at a minimum of every fifteen (15) minutes.
- 7.4 Locate the sample to be tested in “still air” so that temperatures will not be affected by air currents. The sample shall be tested in the position of normal usage. If there is no normal position, the sample shall be tested with the polycarbonate facing up for one (1) test, facing down for one (1) test, and facing perpendicular for two (2) tests.
- 7.5 Provide the input voltage to the equipment under test as follows:
 - 7.5.1 Line powered equipment shall be tested with the line voltage increased to 120% of the nominal rated voltage.
 - 7.5.2 Battery powered equipment shall be tested using a D.C. power supply in lieu of the battery supply. The input voltage shall be equal to 120% of the nominal rated voltage.
- 7.6 Energize the equipment and record the start time on the surface temperature test sheet.
- 7.7 The test shall be conducted for eight (8) consecutive hours.
- 7.8 Record the finish time and results of the test noting any failures on the surface temperature test sheet.
- 7.9 Continue the procedure until all four (4) samples have been tested.
- 8.0 TEST DATA
 - 8.1 Type of attachment used to secure thermocouple to the polycarbonate test sample.
 - 8.2 Location of the thermocouple on the polycarbonate test sample. A pictorial diagram may be helpful in this identification.
 - 8.3 Note the time and temperature on the surface temperature test sheet each time a measurement is made.
 - 8.4 Do not leave any blanks on the test sheet.
- 9.0 PASS / FAIL CRITERIA
 - 9.1 The maximum surface operating temperature of the polycarbonate material must not exceed 115 degrees C (240 degrees F) as stated in the Policy for the Evaluation of a Window or Lens on an Explosion-Proof Enclosure, EDDS APOL2172
 - 9.2 The polycarbonate material shall not warp, crack, craze or show any evidence of deformation.